

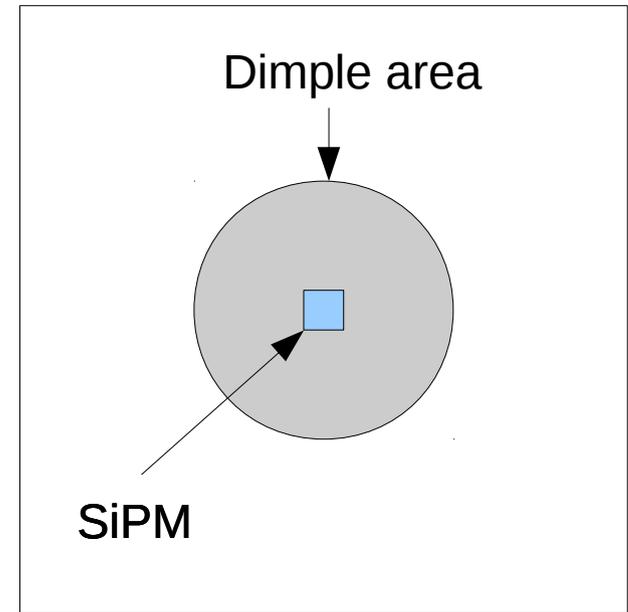
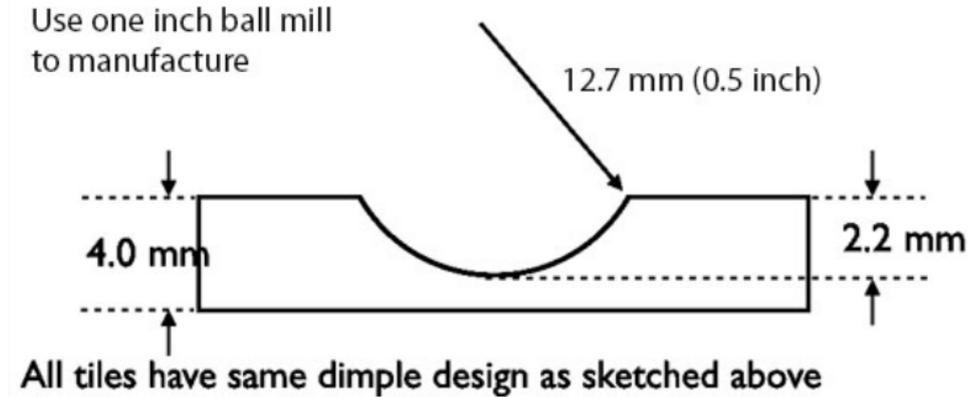
Tiles studies at Fermilab Test Beam Facility (FTBF) May 6 – Jun 8 2019

Jim Freeman, Don Lincoln, Vishnu Zutshi, Sergey Uzunyan, Lorenzo Uplegger



Test cells

Tile design sketch
(those under tests have a different geometry)



“Dark box” enclosure

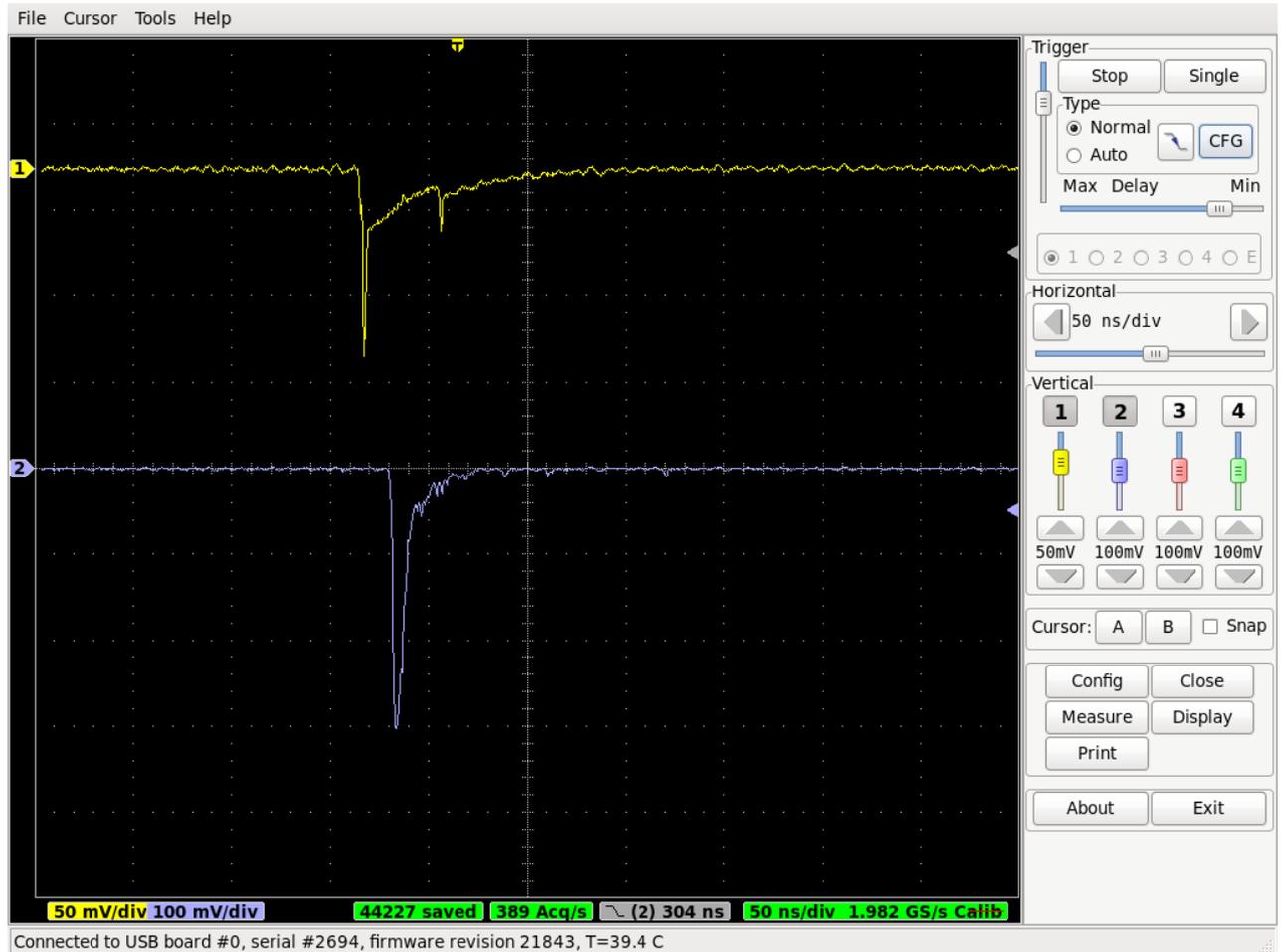
At Fermilab test beam

(120 GeV protons)

Jim Freeman/ Sergey Los

DAQ System

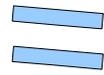
- DAQ : DRS4 DAQ card 4 channels; software oscilloscope, ported to linux
- Table : motion control via SCL utility (Applied Motion Products)
- Analysis : DRS4 data files to ROOT converter, linux



DRS4 oscilloscope

Test stand assembly (top view)

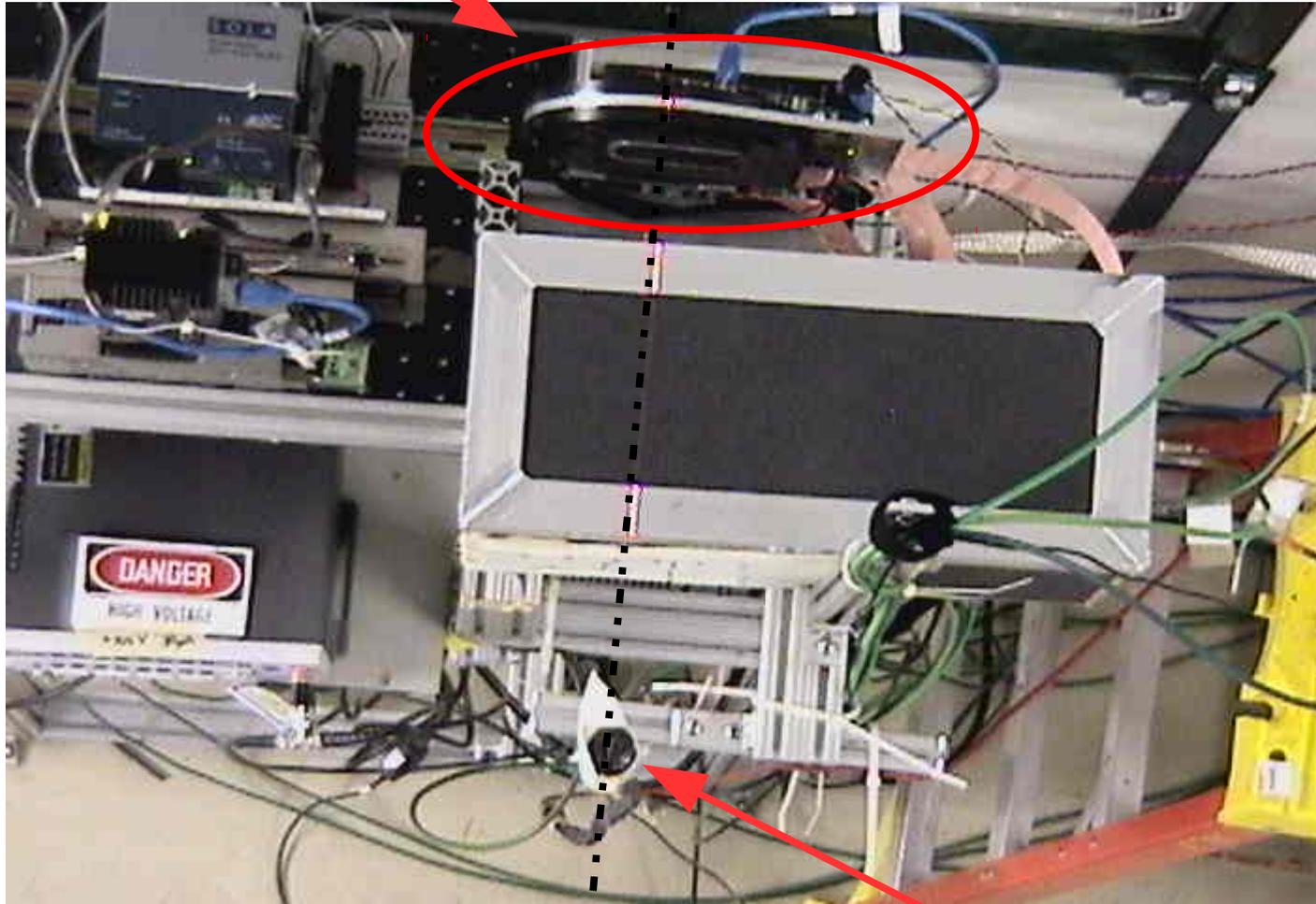
Silicon X-Y strip planes



2 scint counters (trigger)



← Beam (from top to bottom)



3 mm² scint counter

Integration with OTS-DAQ (DRS4FTBF project)

Home My page Projects Help
 Off-the-Shelf DAQ »
DRS4FTBF
 + Overview Activity Roadmap Issues Spent time Gantt Calendar

root / otsdaq-drs4ftbf @ develop

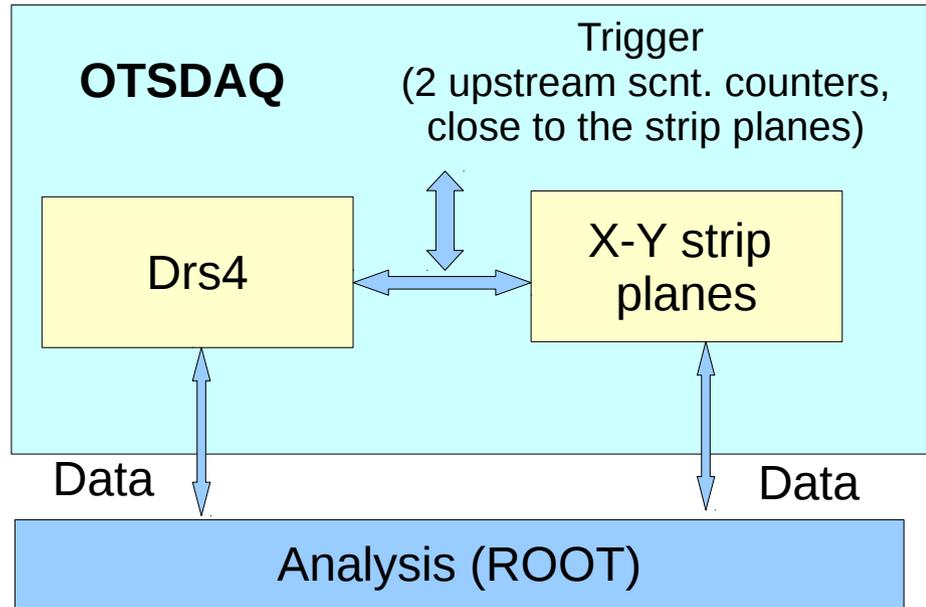
- | Name |
|--------------------------|
| [-] DataProcessorPlugins |
| [-] FEInterfaces |
| [-] InterfaceTest |
| [-] drs506 |
| [-] drs506_cmk |
| [-] drs506_mrb |
| [-] CMakeLists.txt |

Latest revisions

#	Date	Author
faf49148	12/03/2018 04:52 PM	Sergey Uzunyan
65735b15	12/03/2018 03:41 PM	Sergey Uzunyan
2a5d7601	12/03/2018 03:37 PM	Sergey Uzunyan
edc9c450	12/03/2018 03:34 PM	Sergey Uzunyan
a3c1a495	11/29/2018 05:45 PM	Computing Division
fd6fcd5	11/29/2018 04:48 PM	Sergey Uzunyan
4ca98895	11/29/2018 03:31 PM	Computing Division
a1066cf5	11/29/2018 03:30 PM	Computing Division
b1ac8570	11/29/2018 03:21 PM	Computing Division
7fca613a	11/29/2018 01:10 PM	Computing Division

View differences

View revisions



Team: Lorenzo Uplegger, Evan Niner, Mandy Rominsky, Sergey Uzunyan

Analysis software



daq/drs4ftbf

Click on a directory to enter that directory. Click on a file to display its revision history

Current directory: [\[CMS\]](#) / [daq](#) / [drs4ftbf](#) / [drs4anl](#)

File	Rev.	Age
Parent Directory		
bin/		
doc/		
drs_mon/		
drs_tools/		
gmTools/		
include/		
lib/		
macros/		
tmp/		
Feb08_wideBeam.pdf	1.1	3 days
GNUmakefile	1.1	11 days
README.build	1.2	11 days
dsw.sh	1.2	11 days
getData.sh	1.1	11 days
reprocess.sh	1.2	3 days
treeList.lst	1.1	4 days
trkanl.C	1.5	3 days

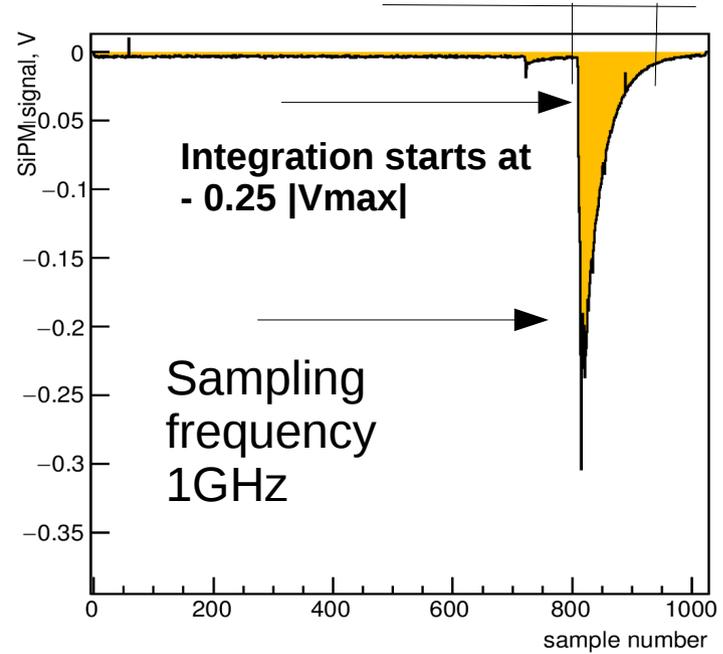
DRS4anl package:

* Combines information from DRS4 and X-Y silicon strip planes

* DAQ reference plots

* Initial analysis

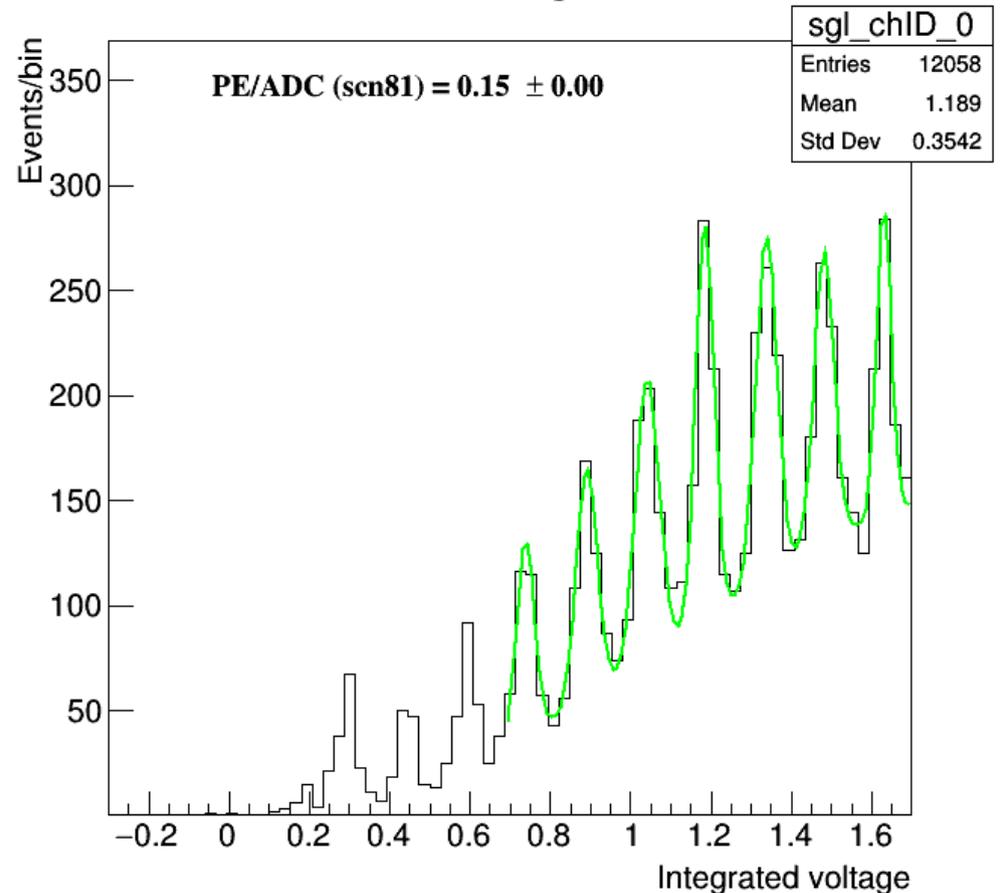
Integration window 60 samples



DAQ/analysis framework (NICADD) + DRS4 specific scripts (Don Lincoln, FNAL)

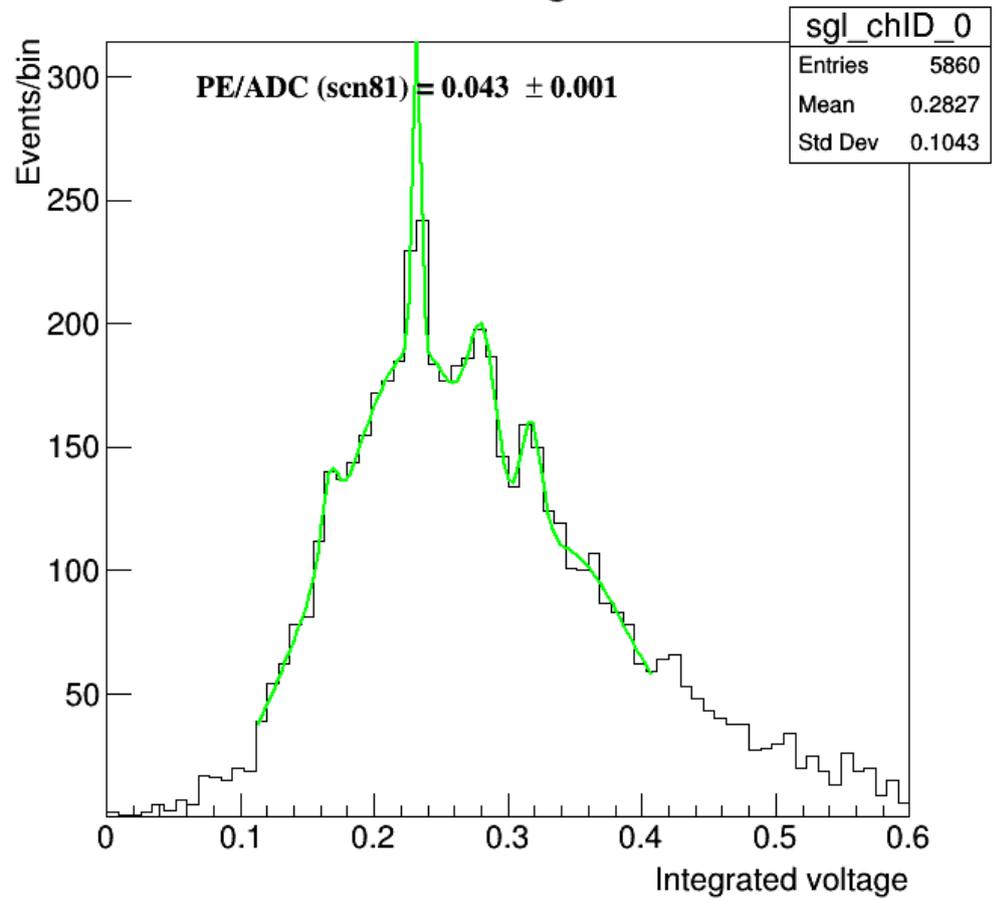
FTBF beam tests 2019 - Calibration

SiPM signal



1.3x1.3mm² SiPM 13360-1350PE
 Vop=54.5 V
 3cm x 3cm x 3mm SCSN81 tile,
 wrapped in tyvek.

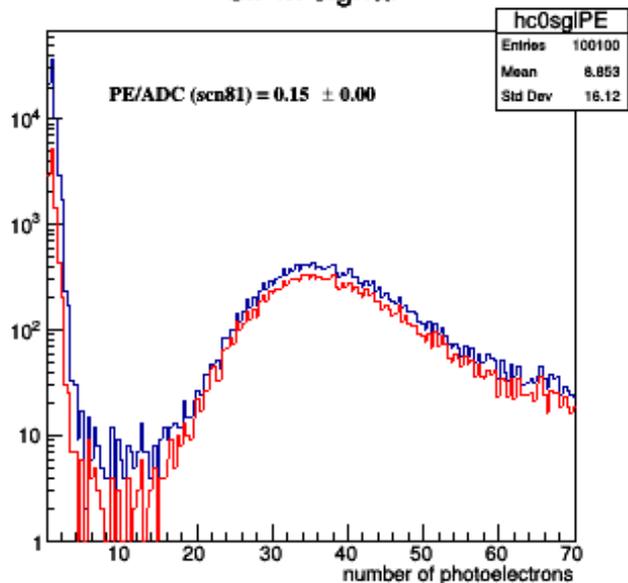
SiPM signal



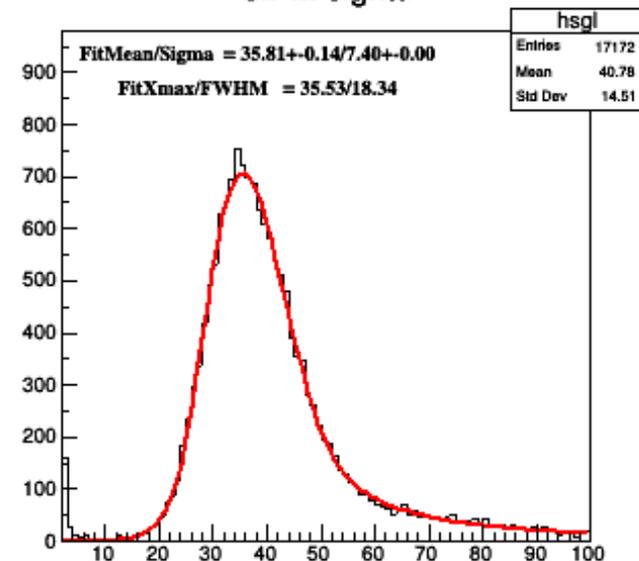
1x1 mm² "DESY" SiPM
 Vop=70.5 V
 3cm x 3cm x 3mm SCSN81 tile,
 wrapped in tyvek.

Results - MayTests

SiPM signal



SiPM signal

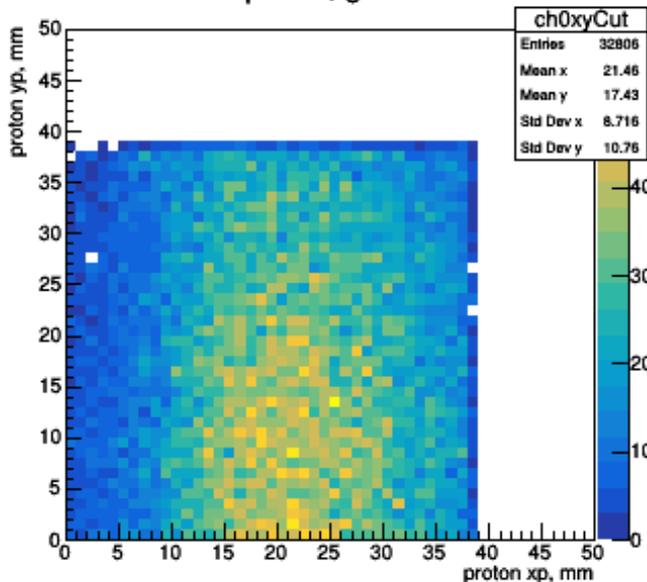


EJ208 tile
ESR wrapping
1.3x1.3 mm² SiPM

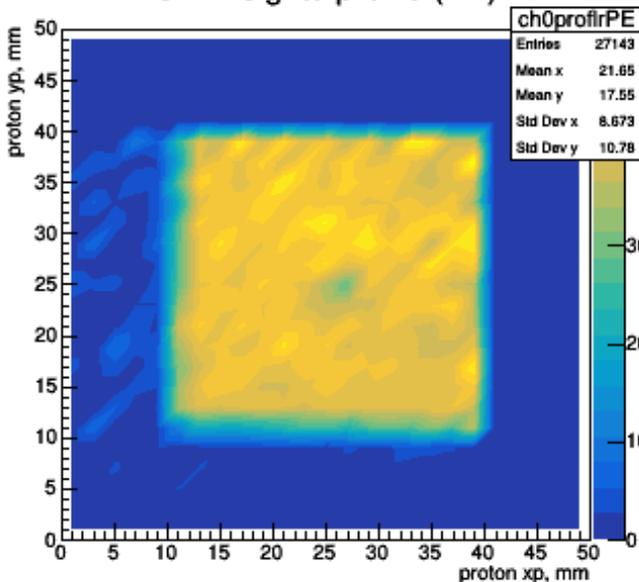
Signal range
fitted using
Gauss+Landau function

MPV is used for
light output estimation

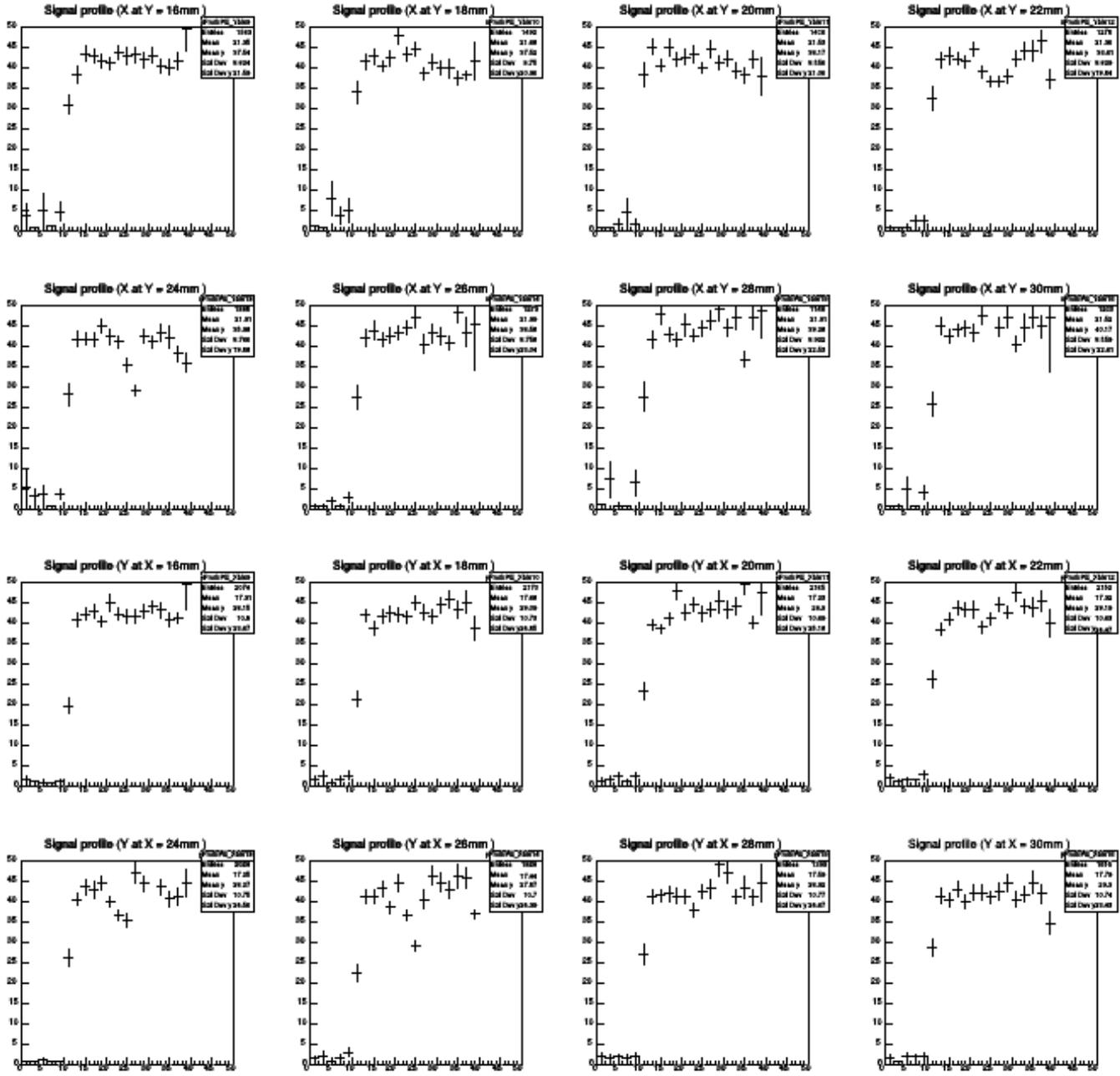
Beam profile, good tracks



SiPM signal profile (PE)



Results - MayTests



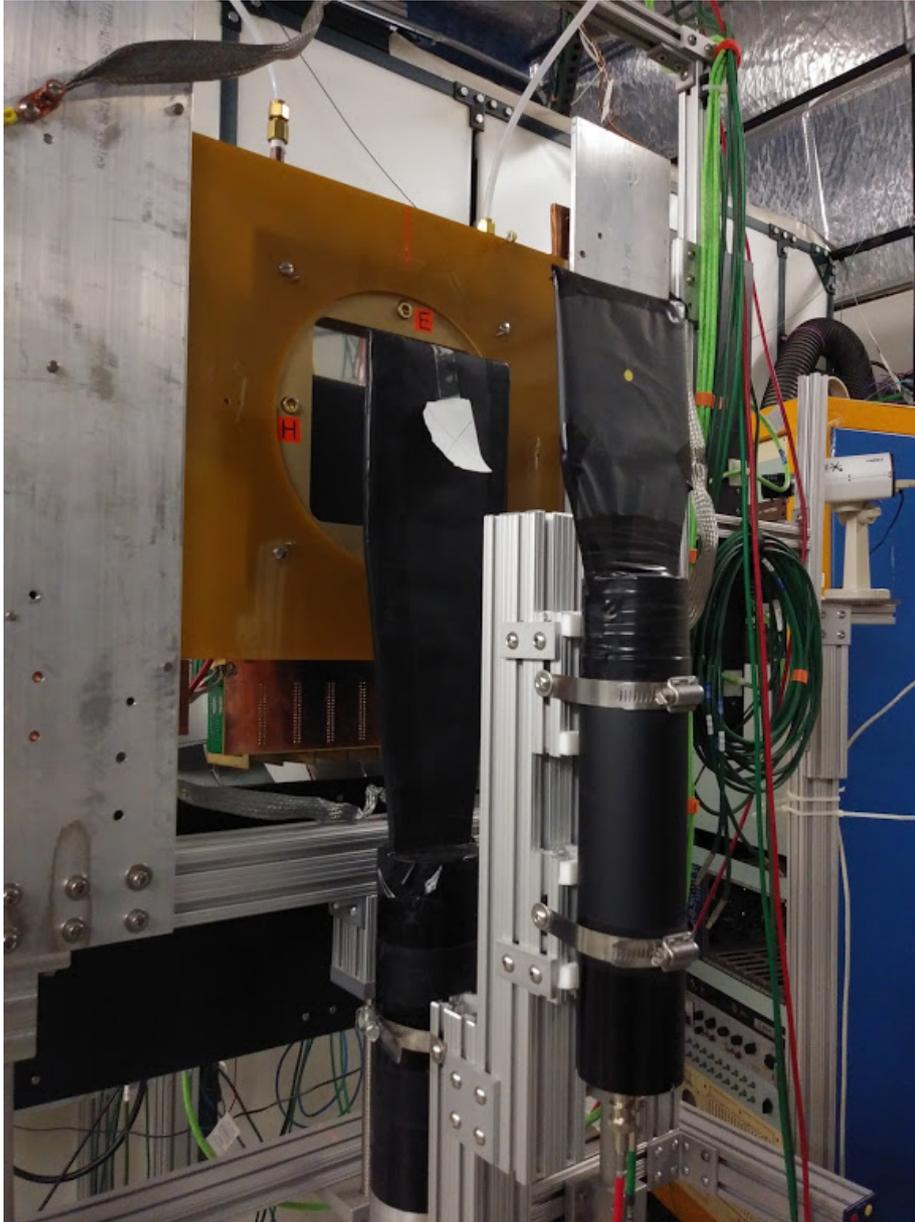
EJ208 tile
ESR wrapping
1.3x1.3 mm² SiPM

Points are the mean
signals for events in
2 mm wide slices



Backup Slides

Trigger Counters



Trigger counters
(operating HV ~ 1600 V)